IN THE CLAIMS:

1. (CURRENTLY AMENDED) An intermediate network device having a plurality of ports for sending and receiving network messages to and from entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, the intermediate network device comprising:

a compact-Generic Application Registration Protocol (GARP) VLAN Registration Protocol (GVRP) application component associated with a selected port, the compact-GVRP application component having:

a GARP Information Declaration (GID) component configured to maintain VLAN registration state for the selected port in response to receiving attribute events for the VLANs;

a compact-GVRP encoder/decoder unit; and

a GVRP protocol data unit (PDU) message generator, wherein

the compact-GVRP encoder/decoder unit is configured to compute encoded values, in accordance with a number base conversion encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value, and

the GVRP PDU message generator is configured to load ~~loads~~ each encoded value into a separate field within a single attribute structure of a single GVRP PDU message, wherein the encoded values computed for all of the VLANs defined within the computer network are loaded within the single attribute structure of the single GVRP PDU message for transmission from the selected port.

2. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 1 wherein the number base conversion encoding algorithm is a base-5 to base-2 number base conversion encoding algorithm.

3. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 2 wherein the number base conversion encoding algorithm is $((((E_X \times 5 + E_{X+1}) \times 5 + E_{X+2}) \times 5 + E_{X+3}) \times 5 + E_{X+4}) \times 5 + E_{X+5}$ and wherein E_X corresponds to the attribute event for the first VLAN in the set, E_{X+1} corresponds to the attribute event for the second VLAN in the set, E_{X+2} corresponds to the attribute event for the third VLAN in the set, E_{X+3} corresponds to the attribute event for the fourth VLAN in the set, E_{X+4} corresponds to the attribute event for the fifth VLAN in the set, and E_{X+5} corresponds to the attribute event for the sixth VLAN in the set.

4. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 1 wherein the compact-GVRP encoder/decoder unit is configured to decode an encoded value contained in a field in a compact-GVRP PDU message, that was encoded using the number base conversion encoding algorithm, to yield attribute event information for a set of VLANs.

5. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 1 wherein the compact-GVRP application component is configured to generate and send a GVRP PDU message containing a just_kidding message.

6. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 5 further comprising:

a leave timer;

a just_kidding timer; and

a just_kidding state machine,

wherein the just_kidding state machine is configured to start the leave timer and to restart the just_kidding timer upon sending the GVRP PDU message containing the just_kidding message.

7. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 6 comprising:

a leave_all timer; and

a leave_all state machine,

wherein the leave_all state machine is configured to enter an active state upon sending the GVRP PDU message containing the just_kidding message and the compact-GVRP application component is configured to generate and send a GVRP PDU message that is configured to cause network entities that receive it to respond with one or more GVRP PDU messages.

8. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 7 wherein the leave timer is set to a high value relative to the leave_all timer.

9. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 7 comprising:

a mode selection unit configured to be in one of a compatible mode, a fast compact mode or a slow compact mode,

wherein the mode selection unit is configured to enter the compatible mode if after the compact-GVRP application component sends the GVRP PDU message containing a just_kidding message and the mode selection unit is either in the fast compact mode or the slow compact mode and the compact-GVRP application component receives a conventional GVRP PDU message.

10. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 7 comprising:

a port partner variable configured to hold a source identifier,

wherein the compact-GVRP application component is configured to place the source identifier in the port partner variable upon processing a received GVRP PDU message containing a negotiation message with a source identifier.

11. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 10 wherein the compact-GVRP application is configured to enter a slow compact mode upon processing a received GVRP PDU message containing a negotiation message with a source identifier that does not match the content of the port partner variable.

12. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 10 wherein the compact-GVRP application is configured to enter a fast compact mode upon processing a received GVRP PDU message containing a negotiation message with a source identifier that matches the content of the port partner variable.

13. (CURRENTLY AMENDED) ~~An~~ The intermediate network device as defined in claim 1 wherein the compact-GVRP application component is configured to generate a mixed format GVRP PDU message containing a conventional attribute structure as well as fields loaded with the encoded values.

14. (CURRENTLY AMENDED) In an intermediate node having a plurality of ports for sending and receiving network messages to and from entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, a method for conveying VLAN membership information comprising ~~the steps of~~:

for a given set of VLANs defined within the computer network, computing an encoded value, in accordance with a number base conversion encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of the given set of VLANs into each encoded value; and

loading each encoded value into a separate field within a single attribute structure of a single GVRP protocol data unit (PDU) message, wherein encoded values for all of the VLANs defined within the computer network are loaded into the single attribute structure of the single GVRP PDU message for transmission at one or more ports in the plurality of ports.

15. (CURRENTLY AMENDED) ~~A~~ The method as defined in claim 14 further comprising ~~the step of~~:

decoding an encoded value, that was encoded using the number base conversion encoding algorithm and is contained in a compact-GVRP PDU message, to yield attribute event information for a set of VLANs.

16. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 14 further comprising ~~the steps of~~:

generating a GVRP PDU message containing a just_kidding message;

sending the GVRP PDU message containing the just kidding message out one or more ports of the plurality of ports; and

restarting a just_kidding timer.

17. (CURRENTLY AMENDED) ~~A~~ The method as defined in claim 16 further comprising ~~the step of~~:

entering a slow compact mode upon the expiration of the just_kidding timer and the non-receipt of a conventional GVRP PDU message.

18. (CURRENTLY AMENDED) ~~A~~The method as described in claim 16 further comprising ~~the steps of~~:

entering one of a slow compact mode or a fast compact mode;

receiving a conventional GVRP PDU message; and

reverting to a compatible mode.

19. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 14 comprising ~~the steps of~~:

receiving a first compact-GVRP PDU message wherein the first compact-GVRP PDU message contains a first source identifier.

20. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 19 comprising ~~the steps of~~:

receiving a second compact-GVRP PDU message wherein the second compact-GVRP PDU message contains a second source identifier that does not match the first source identifier; and

entering a slow compact mode.

21. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 19 comprising ~~the steps of~~:

receiving a second compact-GVRP PDU message wherein the second compact-GVRP PDU message contains a second source identifier that matches the first source identifier; and

entering a fast compact mode.

22. (CURRENTLY AMENDED) An apparatus having a plurality of ports for sending and receiving network messages to and from entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, the apparatus comprising:

means for maintaining VLAN registration state for a selected port in response to receiving attribute events for the VLANs;

means for computing an encoded value, in accordance with a number base conversion encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value; and

means for loading each encoded value into a separate field within a single attribute structure of a single GVRP protocol data unit (PDU) message, wherein encoded values for all of the VLANs defined within the computer network are loaded into the single attribute structure of the single GVRP PDU message for transmission from a port in the plurality of ports.

23. (CURRENTLY AMENDED) A tangible computer readable medium comprising computer executable instructions for:

computing an encoded value, in accordance with number base conversion encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value; and

loading each encoded value into a separate field within a single attribute structure of a single GVRP protocol data unit (PDU) message, wherein encoded values for all of the VLANs defined within a computer network are loaded into the single attribute structure of the ~~a~~ single GVRP protocol data unit (PDU) message for transmission from a port in ~~the~~ a plurality of ports.

24. (CURRENTLY AMENDED) A method comprising:

maintaining virtual local area network (VLAN) registration state at a port of an intermediate network device in a computer network, where a plurality of VLANs are defined within the computer network;

grouping the plurality of VLANs defined within the computer network into sets of two or more different VLANs;

for each set of two or more different VLANs, computing an encoded value with an encoding algorithm that encodes attribute events associated with each VLAN of the two or more different VLANs of the set into a single encoded value for the set; ~~and~~

loading each encoded value into a respective field within a single attribute structure of a VLAN Registration Protocol message such that encoded values encompassing all of the VLANs defined within the computer network are included within the single attribute structure of the VLAN Registration Protocol PDU; and

transmitting the VLAN Registration Protocol PDU message ~~including encoded values encompassing all of the VLANs defined within the computer network~~ from the intermediate network device to one or more other network devices within the computer network.

25. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 24 wherein the plurality of VLANs defined within the computer network includes more than 373 different VLANs.

26. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 24 wherein the plurality of VLANs defined within the computer network includes at least 4094 different VLANs.

27. (CURRENTLY AMENDED) ~~An~~The intermediate network device as defined in claim 1 wherein the VLANs defined within the computer network include more than 373 different VLANs.

28. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 14 wherein the VLANs defined within the computer network include more than 373 different VLANs.

29. (CURRENTLY AMENDED) ~~A~~The method as defined in claim 24 wherein the encoding algorithm is a number base conversion encoding algorithm that takes values of attribute events associated with each VLAN that are represented in a first base, and converts the attribute events into a single encoded value that is represented in a second, different base.

30. (NEW) An apparatus comprising:

means for maintaining virtual local area network (VLAN) registration state at a port of the apparatus, where a plurality of VLANs are defined within a computer network of the apparatus;

means for grouping the plurality of VLANs defined within the computer network into sets of two or more different VLANs;

means for computing, for each set of two or more different VLANs, an encoded value with an encoding algorithm that encodes attribute events associated with each VLAN of the two or more different VLANs of the set into a single encoded value for the set; and

means for loading each encoded value into a respective field within a single attribute structure of a VLAN Registration Protocol message such that encoded values encompassing all of the VLANs defined within the computer network are included within the single attribute structure of the VLAN Registration Protocol PDU; and

means for transmitting the VLAN Registration Protocol PDU message from the intermediate network device to one or more other network devices within the computer network.

31. (NEW) The apparatus as defined in claim 30 wherein the plurality of VLANs defined within the computer network includes more than 373 different VLANs.

32. (NEW) The apparatus as defined in claim 30 wherein the encoding algorithm is a number base conversion encoding algorithm that takes values of attribute events associated with each VLAN that are represented in a first base, and converts the attribute events into a single encoded value that is represented in a second, different base.